



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/672,007	09/29/2000	Carl Fredric Ulf Kronestedt	040020-296	2990

27045 7590 03/23/2004

ERICSSON INC.  
6300 LEGACY DRIVE  
M/S EVR C11  
PLANO, TX 75024

EXAMINER

EUGENE, WANDA

ART UNIT	PAPER NUMBER
----------	--------------

2666

DATE MAILED: 03/23/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/672,007

Applicant(s)

KRONESTEDT, CARL FREDRIC  
ULF

Examiner

Wanda Eugene

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 29 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 11, 13, 15, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 6, 8-10, 12, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 17 and 18 are objected to because of the following informalities:

Claim 1 line 9, "steps of" should read --steps of: --

Claim 17 line 31, "comprising," should read -- comprising:--

Claim 17 line 32, "to measure" should read -- for measuring--

Claim 17 line 1, "to select" should read -- for selecting--

Claim 17 line 5, "to change" should read -- for changing--

Claim 18 line 11, "comprising," should read --comprising:--

Claim 18 line 12, "switch," should read --switch;--

Claim 18 line 13, "station," should read --station;--

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 1-14, 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, the limitation "first radio channel" in line 22, is unclear whether it is referring to a frequency hopping radio channel or another radio channel. Furthermore, applicant

Art Unit: 2666

recites a plurality of steps, without articulation how each of the steps are connected in order to function as claimed particularly the claimed switching. The limitation, switching (S5) radio channels for sending said stream from the first radio channel (FH RCH) to a second non-frequency hopping radio channel (NH RCH) in conjunction with said change of channel coding scheme in claim 1 and switching from the first coding scheme to a second coding scheme in claim 13, is missing a utility linking what the cause of the switching in the coding scheme.

Claim 17 recitation of the limitation "any of said first three channel coding schemes to said fourth of said coding schemes" is improper. The claim only makes reference to a selected coding scheme, but there is no mention of a four channel coding schemes to change from.

With respect to claim 18, the word "means" is preceded by the word(s) "mobile station" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2666

5. Claims 1-4, 7, 10, 11, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over admission of applicants prior art in view of Raith (WO 97/15131) and in further view of Jones (GB 2,318,252).

Regarding claims 1, 10, 11, 15 and 17 applicants prior art teaches a mobile radio network including one cell corresponding to a number of mobile stations in which channel coding provides redundant information (pg 2 lines 33-34; pg 3 lines 1-2), transmission occurs via a first frequency hopping radio channel (pg 2, lines 15-17) and transmission quality is measured on a first radio channel (pg 3 lines 10-11). Applicants prior art admission fails to teach switching from the first channel-coding scheme to a second channel-coding scheme and switching radio channel from frequency hopping to non-frequency hopping. Raith discloses changing channel coding based upon quality of first transmission rate (pg 18 line 23-31). Jones further discloses a frequency allocation system in which a call assigned to a non frequency-hopping channel is deemed bad can be reassigned to a frequency-hopping channel (pg 10 line 8-12). The channel of channel coding with the switching between frequency hopping and non-frequency hopping essentially randomizes the signal to interference ratios encountered thus, improving the radio conditions and decreasing the bit error rate. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the applicants admitted prior art to include a function to switch channel coding and radio frequency based upon measured quality as taught by Raith and Jones in order to achieve improved performance and diversity.

In regards to claim 2, the admitted prior art teaches changing the coding scheme in response to comparison and measurements result fulfils a preset criterion that qualifies change of coding scheme (**evaluate the quality of a radio connection to which a given radio channel has**

**been allocated and to select a coding scheme with which the highest possible data rate is obtained pg 5 lines 18-21).**

Regarding claims 3 and 4, the applicant discloses the claimed invention except for radio channel transmission taking place within a cell and radio channels divided into group of frequency hopping and non-frequency hopping. Jones discloses two frequencies assigned to a cell and frequencies  $f_0$  and  $f_1$  are assigned to a cell (pg 5 lines 19-21) and operation in accordance of GSM protocol of two modes of operation, fixed frequency and frequency hopping (pg 5 lines 13-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of the admitted prior art and Raith to include a means for measuring the channel coding in order to allow for frequency reuse and to exploit the advantages of frequency hopping and non-frequency hopping there by improving the quality of a signal.

In regards to claim 7, the admitted prior art teaches radio link (RL) includes an uplink and a downlink which are controlled separately in accordance with the method steps **(uplink, link from the mobile station to the base station and a downlink, link from the base transceiver station BTS to a mobile station pg3 lines 11-20)**

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over admission of applicants prior art in view of Raith (WO 97/15131) and in further view of Alamouti (2003/0133516).

Applicants admitted prior art teaches a mobile radio network including one cell corresponding to a number of mobile stations in which channel coding provides redundant information,

transmission occurs via a first frequency hopping radio channel and transmission quality is measured on a first radio channel. Applicants prior art admission fails to teach switching from the first channel-coding scheme to a second channel-coding scheme and switching between two antennas. Raith discloses changing channel coding based upon quality of first transmission rate (pg 18 line 23-31). Alamouti et al. further discloses time-space diversity coding employing two transmitter antennas in which transmission occurs on selected antenna (par 0014 and 0015). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the applicants admitted prior art to include a function to switch channel coding and antennas based upon measured quality as taught by Raith and Alamouti in order to achieve improved performance, reduce cost, power consumption in GSM systems and to reduce fading.

### ***Allowable Subject Matter***

7. Claims 5, 6, 8-10, 12, 14 and 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Anderson et al. (5,937,002), Channel coding in a radio communication system

Wallstedt et al. (5,903,834), Distributed indoor digital multiple-access cellular telephone system

Schwendeman et al. (4,914,649), Multiple frequency message system


Kemppainen (5,428,602), Frequency-Hopping arrangement for a radio communication system

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wanda Eugene whose telephone number is 703-305-8978. The examiner can normally be reached on M-F 7am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

we

  
RICKY NGO  
PRIMARY EXAMINER